MEMORANDUM

TO: Members, Clark Fork Basin Water Management Task Force
FROM: Gerald Mueller, Project Coordinator
SUBJECT: Summary of the April 5, 2004 Meeting
DATE: April 13, 2004

Participants

The following people participated in the Task Force meeting:

Task Force Members:

Eugene Manley	Granite County
Harvey Hackett	Bitter Root Water Forum
Fred Lurie	Blackfoot Challenge
Bill Slack	Joint Board of Control/Lower Flathead Basin
Jim Dinsmore	Upper Clark Fork River Basin Steering Committee
Matt Cliffort	Clark Fork Coalition
Elna Darrow	Flathead Basin Commission
Jay Stuckey	Green Mountain Conservation District/Lower Clark Fork Basin
Steve Fry	Avista Corporation
Gail Patton	Sanders County
Marc M. Spratt	Flathead Conservation District
Verdell Jackson	Legislature

Staff:

Gerald Mueller	Montana Consensus Council (MCC)
Mike McLane	Montana Department of Natural Resources and Conservation (DNRC)

Meeting Goals:

- ∃ Review language developed by Marc Spratt regarding the replacement of irrigation water use by domestic use and its significance.
- ∃ Discuss state management of a block of Hungry Horse Reservoir Water
- ∃ Review the findings of option ranking
- ∃ Discuss hydropower water rights, junior water rights, and future water development
- ∃ Hear a presentation on the economic and demographic trends in the basin
- ∃ Discuss the next steps regarding preparation of the management plan
- ∃ Agree on next steps

Language Regarding the Replacement of Irrigation Water Use by Domestic Use

As requested by the Task Force at its March 1, 2004 meeting, Marc Spratt developed a paper regarding changing water use in the Clark Fork basin (Basin) and specifically about replacement of agricultural use by domestic use in rural subdivisions in Flathead County. He passed out his paper to the Task Force and it is attached below as Appendix 1. Mr. Spratt asked people to review and send him comments.

Using available data sources from the USDA found that irrigated acreage decreased from 1987 to

1997 Basin wide and in the Flathead, Sanders, Mineral, Ravalli, Granite, and Deer Lodge Counties. Irrigated acreage in Lake, Missoula, Silverbow, and Powell Counties increased over this same period. Some Task Force members questioned the accuracy of the USDA data, particularly for Sanders and Granite County. In these counties the Task Force members felt that irrigated acreage has remained largely constant.

Mr. Spratt calculated that based on trends in Flathead County, urban growth in water use may result in water use in excess of twice the agriculture use it replaces.

Using DNRC appropriations data, Mr. Spratt found that surface and groundwater appropriations in the Basin diverged significantly in 2001 with groundwater appropriations increasing and surface water appropriations decreasing significantly. Mr. McLane cautioned that the DNRC annual volumes diverted is some of the DNRC's least verified data and may not correspond with actual water use.

State Management of a Block of Hungry Horse Reservoir Water

Mike McLane reported that he has made contact with officials from the Bureau of Reclamation, the federal agency that operates Hungry Horse Dam and Reservoir. These officials have not yet responded with information about the availability of a block of water that the state might manage. In previous meetings, the Task Force has heard that the federal statute that created the Bureau subjected it to state water law, and that the Bureau's water rights claims for Hungry Horse include a large amount of storage,for irrigation that has not been developed. Mr. McLane also stated that in the Missouri basin, the state and water users routinely contract for water from the Canyon Ferry Reservoir. He noted, however, that Canyon Ferry is not subject to claims for water for endangered fish species as are dams on the Columbia River. It may be that the Bureau may take the position that the stored water claimed for irrigation in its water rights application has been used for other purposes including endangered species. Task Force members suggested that the possibility of using Hungry Horse water for appropriation by the state for water development in the Clark Fork be noted as speculative. Mr. McLane agreed to try to get additional information from the Bureau about the availability of water that the state might management and the process by which the state might pursue such management. Mr. McLane will seek to prepare and present to the Task Force a paper on this subject prior to its May meeting.

Option Ranking Review

The Task Force continued the process began at its March meeting of reviewing all possible recommendations that might be included in the management plan that have been identified to date. Options that should be included in the plan in chapters 8 and 9 were identified. See Appendix 2 below. " Prior to the next meeting, Gerald Mueller will attempt to work the recommendation alternatives selected by the Task Force into the plan chapter format.

Continued Discussion of Hydropower Water Rights, Junior Rights and Future Water Development

This topic was postponed until the next meeting.

Clark Fork Basin Economic and Demographic Trends

Dr. Larry Swanson, Associate Director for Regional Economics, Center for the Rocky Mountain West, presented a Power Point presentation summarizing the economic and demographic situation

and trends in the counties that make up the Clark Fork River Basin. Dr. Swanson will be presenting a report in about a month that can be incorporated into the basin water management plan.

Preparation and Structure of the Management Plan

Gerald Mueller reported that Matt McKinney, Will Harmon, a technical writer for the Consensus Council, and Mike McLane have met to discuss preparation and structure of the water management plan. Under discussion is a two volume approach, a summary document that can be circulated widely and a more detailed technical document with limited circulation.

Next Meeting

The next meeting i scheduled for Monday, May 3, 2004 at 9:00 a.m. in the DFWP conference room at 3201 Spurgin Road in Missoula. The agenda will include:

- Discussion of the possible management by the State of a block of Hungry Horse Reservoir water;
- Continued discussion of a hydropower water rights, junior water rights, and future water development;
- Discussion of the state water plan hearings on the management plan; and
- Next steps.

Appendix 1
Changing Water Use in the Clark Fork Basin

Water use in the Clark Fork Basin commenced in 1850 or so with the initiation of ranching activities in the Bitterroot. By 1930 over 68% of the total agricultural water rights in the basin were allocated. Given a reasonable allocation for compacts currently under negotiation, it appears that over 90% of the irrigation appropriations were granted by 1950. The population of the basin has continuously increased since the basin was opened for settlement. Increases in population will necessarily increase the demand for water. Agriculture, and specifically irrigation, has historically been the largest user of water in the basin. An analysis of water use in the Pacific Coast states (Houston et al., 2003) projects a decrease of irrigation withdrawals sufficient to maintain total withdrawals below 1995 levels through 2050 due to increases technological efficiencies. Expected reductions in irrigation water use will be offset by increasing demands for water in nonagricultural uses (Houston et al., 2003). It appears these trends are already occurring in the Clark Fork Basin.

Irrigated acreage within the Clark Fork Basin is decreasing (Figure 1). Between 1987 and 1997, the irrigated acreage within the basin decreased 2100 acres (0.6%). Preliminary estimates for 2003 suggest the trend is continuing. The effect within sub-basins varies; the Flathead for example is experiencing greater changes.

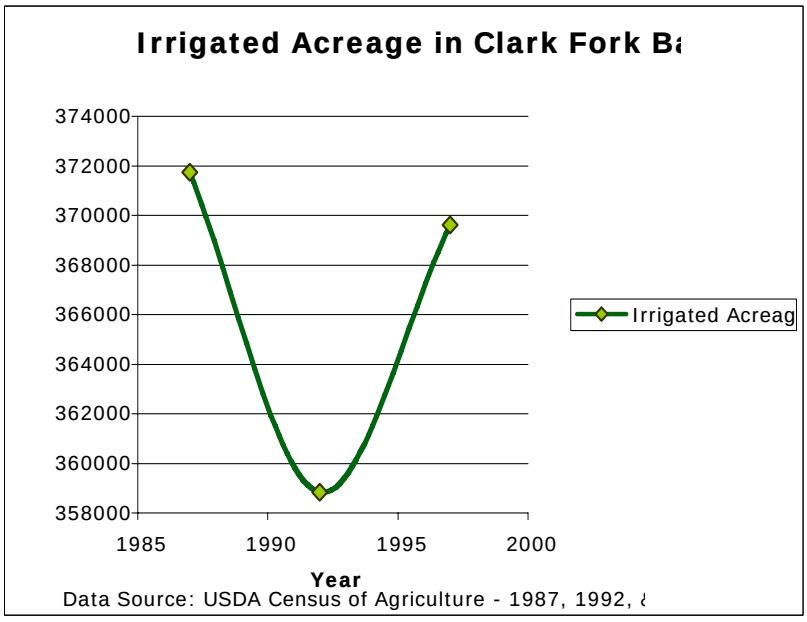


Figure 1. Changes in Irrigated Acreage in the Clark Fork Basin.

The reduction in irrigation is due to several different activities. Two common causes of reductions in irrigation withdrawals are subdivision of irrigated land and set-asides in conservation easements. The latter may or may not result in a reduction in withdrawals depending on the easement conditions. Another potential reduction in irrigation withdrawals is changing technology.

Land used primarily as farmland in Flathead County decreased 22 percent (60,000 acres) from

277,050 acres in 1992 to 216,303 acres in 1997(USDA, 1997). Over the past 30 years, 170,000 acres has been subdivided into other uses. Over the past seven years, one timber company has developed or sold for development approximately 18,000 acres of timberland. Irrigated acreage within Flathead County is decreasing as land is removed from the farm land base. Data from the Agricultural Census (USDA, 1997), shown in Figure 2, clearly illustrates the reduction in irrigated acreage in Flathead County.

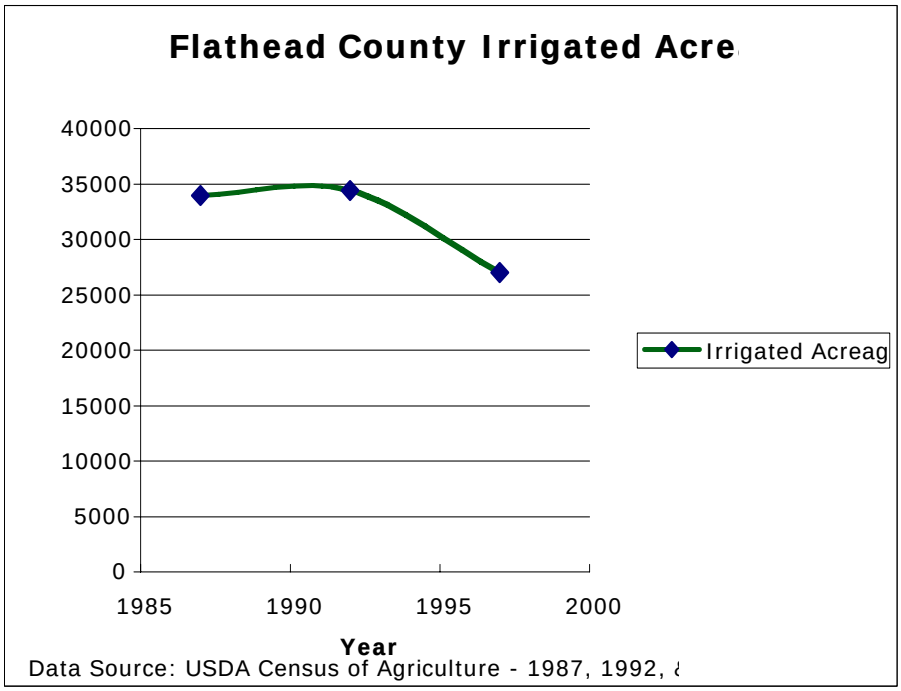


Figure 2. Irrigated acreage in Flathead County.

National irrigated cropland area has expanded by a third since 1969, while field water application rates have declined about one fourth, leaving total irrigation water applied about the same in 1995 as in 1969 (USDS, 2000). Within the Clark Fork Basin, a substantial shift from less efficient (defined as irrigation water either penetrating past the root zone or seepage loss from the conveyance system) irrigation to more efficient systems is ongoing which suggests that possibly a 25% reduction in diversion may be occurring due to technological changes. (**needs documentation**).

A downward trend of farmland is apparent in Lake County as well (Figure 3). Overall irrigated acreage in the basin is decreasing as shown in Table 1. The greatest reductions appear to be in Flathead, Mineral and Granite counties.

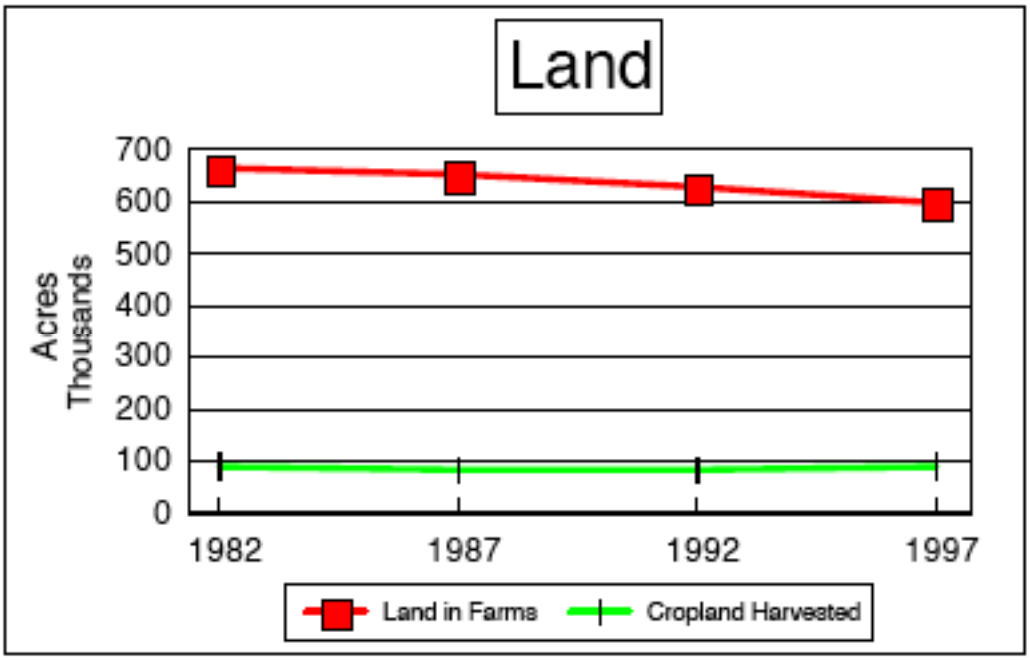


Figure 3. Farmland trend in Lake County.

Table 1. Irrigated acreage in the Clark Fork Basin 1987 – 1997 (USDA,1997).

County	**1987** (Acres)	**1992** (Acres)	**1997** (Acres)	Change (Acres)	%
Flathead	33981	34425	26983	-6998	-20.6
Lake	90202	92087	99521	9319	10.3
Sanders	20326	18856	18432	-1894	-9.3
Mineral	1526	1342	1254	-272	-17.8
Missoula	18941	22161	22291	3350	17.7
Ravalli	77247	65717	76873	-374	-0.5
Granite	42991	39996	36131	-6860	-16.0
Deerlodge	18530	20233	17639	-891	-4.8
Silverbow	6751	8101	7542	791	11.7
Powell	61245	55924	62952	1707	2.8
Basin Totals	371740	358842	369618	-2122	-0.6

At the same time that irrigation is decreasing, the population and urban and suburban development within the basin is increasing. Population growth projected for Flathead County in 2004 is the largest numerical increase in Montana. Two of the top three percentage growth rates are in the Clark Fork Basin, Flathead and Ravalli counties. Increasing population comes with increasing water use.

Appropriations recorded in the DNRC database for water rights reflect this change. The continuing reduction in agricultural water use is suggested by the downward trend shown in Figure 4 for the agricultural appropriations filed by year. The trend lines (dashed) are linear regressions that generally reflect a moving average. It is also of note that there is a slight downward trend to

domestic appropriations, which may reflect inadequate data or a trend to community or municipal supplies that result in lower water use per residence than allocated on an individual appropriation basis.

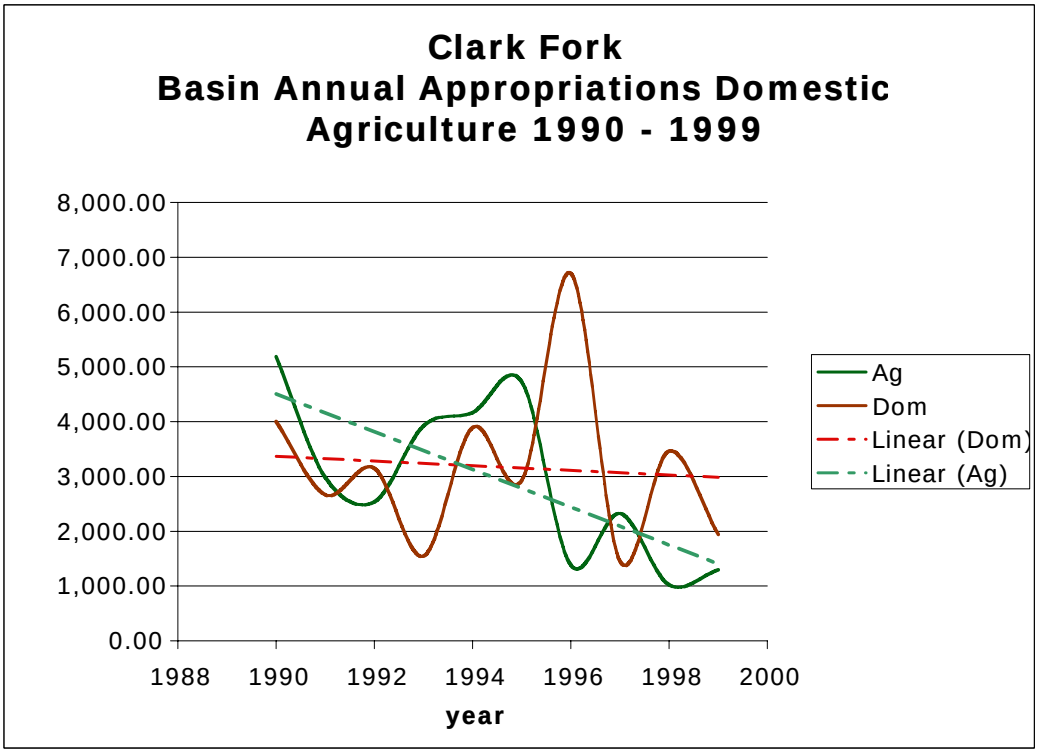
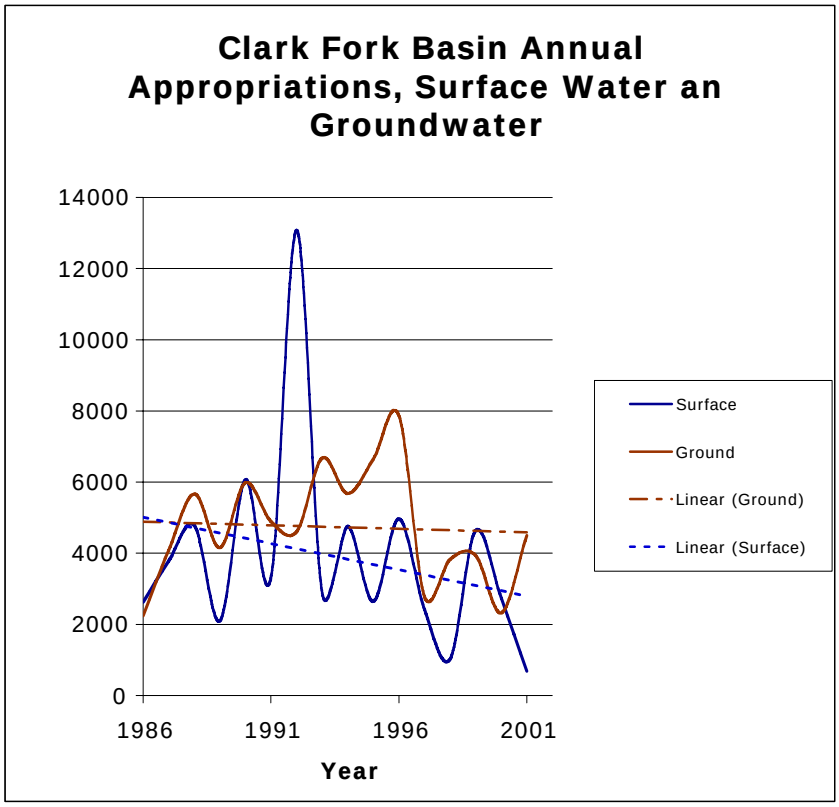


Figure 4. Agricultural and Domestic appropriations 1990 – 1999.

A recent trend in Flathead County is to small lots (6,000 square ft.) typical of a city lot. The normal allocation of irrigation water is 2.5 ac-ft per acre per year for alfalfa in western Montana. According to the Montana Department of Natural Resources, the normal allocation of water per residence is 1 ac-ft. At six lots per acre, the water demand based on high density residential development is 6 ac-ft per year versus 2.5 ac-ft per year for irrigated agriculture. If this comparison is valid, urban growth may result in water use over twice as great as the agriculture it replaces.

In addition to a change in water use, a change in source is occurring within the basin. Since 1986 as shown in Figure 5, groundwater development has been increasing while surface water development is decreasing. It is particularly of note that surface water and groundwater new appropriations diverge significantly in 2001 with groundwater increasing and surface water decreasing significantly.

Figure 5. Comparison of Annual new appropriations for all surface and groundwater appropriations in the Clark Fork Basin.


Clark Fork Basin Annual Appropriations, Surface Water an Groundwater
14000
12000
10000
8000
6000
4000
2000
0
1986
1991
1996
2001
Year
Surface
Ground
Linear (Ground)
Linear (Surface)

References Cited

Houston et al., 2003. Past and future water use in Pacific Coast States, General Technical Report PNW-GTR-588, USDA, Forest Service, Portland OR, 37 p.

USDA, 1997, 1997 Census of Agriculture County Profile FLATHEAD
MONTANA, United States Department of Agriculture, Montana Agricultural Statistics Service

USDA 2000, irrigation and water use: questions and answers, U. S. Department of Agriculture, Economic Research Service.

Appendix 2

Summary of Management Plan Recommendation Options
Chapter 2 - Closing the Data Gaps
2.1 Montana Water Rights Data Base
2.1.1 Complete the examination process for all water rights claims.
2.1.2 Standardize all data entries and modify formats as necessary to allow for data queries and manipulation.
2.1.3 Update the information contained in "Montana Water Use in 1980".
2.2 Other Water Rights Issues
2.2.1 Encourage all water use diversions to be measured; require measurement of flow and volume of diversions for all new water right permits and changes.
2.2.2 Develop a policy and objective basis for evaluating adverse impact.
2.2.3 Develop a policy and objective basis for evaluating water availability.

Summary of Management Plan Recommendation Options
2.2.4 Develop a policy for addressing return flows. Irrigation return flow is most important, but other consumptive uses also generate returns (municipal wastewater for example).
2.3 NRIS
2.3.1 All water rights data collection, development, and updating should result in databases that are connected to GIS-systems that are readily accessed and queried online through NRIS.
2.3.2 Increase NRIS server capacity greatly.
2.3.3 Increase query capabilities for existing and future water rights databases so that a user can develop customized search areas.
2.4 Studies
2.4.1 Improve water use and depletion data.
2.4.2 Note in text that administration of surface water is understood, but groundwater is less controlled, defined, and understood.
2.4.3 Groundwater resources

Summary of Management Plan Recommendation Options
2.4.3.1 Support MBMG efforts to develop a groundwater monitoring infrastructure that contains dedicated monitoring wells.
2.4.3.2 Evaluate groundwater hydraulics for those aquifers in irrigated areas to better understand return flow patterns and quantities. This information could be part of the groundwater assessments being conducted by MBMG.
2.4.3.3 Estimate sustainable yields from aquifers that are currently used. This information could be part of the groundwater assessments being conducted by MBMG.
2.4.3.4 Make all information available on-line through NRIS.

Chapter 7 - Options to Protect the Security of Water Rights
7.1 Complete the water rights adjudication & resolve the status of the Salish and Kootenai tribal water rights through negotiation or litigation.
7.1.1 Establish a reasonable goal for achieving enforceable decrees in the Clark Fork Basin such as 5 years.
7.1.2 Provide additional resources for the adjudication process, including additional funding for the Water Court and the DNRC.
7.1.3. Re-prioritize DNRC's existing resources to focus on the adjudication.
7.2 Place holder for State-Avista agreement regarding Clark Fork Basin water rights.
7.3 Improve the accuracy of the water rights adjudication through Water Court examination of claims and Court action to resolve those it finds to be inaccurate (on-motion proposal).
7.4 Relieve the Burden on Existing Water Rights Holders
7.4.1 Increase the state's authority and resources to investigate and enforce water rights to reduce the enforcement burden on individual right holders.
7.4.2 Change Montana law to allow a judge to award attorney fees to a private party bringing an action for an illegal use of water. (Language from Tim Hall.)

Chapter 7 - Options to Protect the Security of Water Rights
7.4.3 Require DNRC to administer a water commissioner program that trains, selects, and evaluates water commissioners.
7.4.4 Require all water rights holders on a decreed water source to divide the water commissioner costs according to the percentage share of the total water rights.
7.4.5 Utilize court appointed or DNRC mediators to resolve enforcement issues.
7.4.6 Require DNRC to initiate administrative rule making to establish criteria for objecting to water rights permit and change applications that increase the burden on applicants while reducing the burden on existing rights holders.

Chapter 8 - Options to Promote the Orderly Development of Water

8.1 Regulatory Options to Promote the Orderly Development of Water

8.1.1 Complete the water rights adjudication.

8.1.2 Increase the pay and benefits for water commissioners and fund them by imposing a minimum fee on all rights holders in the basin for which they are allocating water.

8.1.3 Create single and/or multiple purpose water quantity management organizations such conservancy, irrigation districts, etc, that are effective for the scale at which the management would occur.

8.1.4 Create local sub-basin water management districts.

8.1.5 Eliminate or modify the 35 gpm exemption threshold for ground water permits.

8.1.6 Create a legally defensible definition of a hydrologic connection between surface and ground water and require an applicant for a ground water permit to provide information about the nature of the connection.

8.1.7 Require DNRC to evaluate cumulative impacts before granting surface or ground water right permit.

8.1.8 Add public interest criteria for water rights permits

Chapter 8 - Options to Promote the Orderly Development of Water
8.1.8.1 The effects on the quantity and quality of water for existing beneficial uses in the source of supply.
8.1.8.2 The availability and feasibility of using low-quality water for the purpose for which applicant has been made.
8.1.9 Make new water allocations through leases in addition to water right permits.

8.2 Management Options to Promote the Orderly Development of Water
8.2.1 Examine options for increasing water use through use of high spring flows and snow melt (rain on snow events).
8.2.2 Increase water storage.
8.2.3 Actively manage return flows.
8.2.4 Continue to use water leasing as a water management tool.
8.2.5 Continue to use marketing of water rights as a water management and development tool.
8.2.6 Utilize ground water storage, an option that may be technically difficult;
8.2.7 Protect and rehabilitate wetlands through active flood plain and wetland management, bank storage, etc.
8.2.8 Create an entity to coordinate water quantity and quality concerns among water users.
8.2.9 Provide incentives for centralized and/or decentralized water supply and sewage systems instead of individual wells and septic systems.

8.2 Management Options to Promote the Orderly Development of Water
8.2.10 Admonish the USFS to carefully consider and act on its mandate to manage forests to increase water flow.
8.3 Research and Education Options to Promote the Orderly Development of Water
8.3.1 Evaluate the availability of ground water.
8.3.2 Identify the ground water recharge rate.
8.3.3 Consider ground water-surface water interrelationships.
8.3.4 Define more accurately sub-basin hydrology and water, biological, and economic tradeoffs.
8.3.5 Study water availability to identify places of stress.
8.3.6 Support use of water curricula in public schools.
8.3.7 Re-invigorate the water policy committee to increased the focus on water issues and water education for legislators.
8.3.8 Appoint an interim legislative committee to consider the ongoing water rights adjudication.

Chapter 9 - Options for Conserving Water

9.1 Administrative Options for Conserving Water

9.1.1 Improve DNRC's system for handling and managing water data to make it more accessible to the public.

9.1.2 Require measurement of water use for new water permits and change authorizations.

9.1.3 Hold the United States Forest Service forest management accountable for water yield.

9.1.4 Encourage creation of smaller subbasin planning entities.

9.1.5 Encourage the adoption of local government model water conservation ordinances.

9.1.6 Encourage counties to require water meters in new subdivisions.

9.1.7 Encourage local government-owned water systems to require water meters.

9.1.8 Encourage DNRC and DEQ to reach agreement about and coordinate information required from pump tests (DEQ requires pump test resulting in 1.5 times design flow rate; DNRC requires pump test showing design flow rate).

9.1.9 Encourage protection for areas in which surface waters recharge ground water.

Chapter 9 - Options for Conserving Water
9.2 Management Options for Conservation of Water
9.2.1 Measure water uses and diversions.
9.2.2 Improve water conveyance efficiency.
9.2.3 Develop basin water management and drought plans with objectives identified by local water users.
9.2.4 Identify, manage and protect areas in which surface waters recharge ground water.
9.2.5 Manage the supply side, e.g. use artificial recharge.
9.3 Education and Research Options for Conservation of Water
9.3.1 Continue existing water conservation programs.
9.3.2 Provide education about activities that might affect ground water recharge and quality.
9.3.3 Point out that wasting water also wastes electricity.

Chapter 9 - Options for Conserving Water
9.3.4 Research the connection between ground water infiltration and base stream flow.
9.3.5 Determine ways to conserve water and quantify the potential volumes of conserved water.
9.3.6 Research the connection between the basin vegetation and base flow.
9.3.7 Determine the seven day average low flow in a ten year period which is sometimes known as 7Q10.
9.3.8 Provide for long-term, coordinated education for water users.